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NPIC/D-219-70

MEMORANDUM FOR: Assistant Deputy Director for Intelligence

SUBJECT : Request for Approval of a Contract with
[redacted] for a Study
of Automated Film Transport Systems for
[redacted] from FY-1971 R&D Funds

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1. This memorandum requests approval for the commitment of R&D funds for a NPIC contract. The specific request is stated in Paragraph 7.

2. Whenever it is necessary to view, photographically reproduce, or measure imagery in roll film form, complicated film transport systems are required. This is particularly true in the case of the rear projection viewers, step and repeat printers, and automated photographic enlargers. The high resolutions and varieties of formats found in modern imagery dictate that these systems be highly sophisticated. In rear projection equipment, it is necessary to move the image precisely and smoothly so that no jitter is observed while viewing imagery dynamically under very high magnifications. At the same time, specialized film flattening techniques are required so that the image stays in focus over the entire format of the screen. In photo reproduction equipment, smoothness, high speed, and absolute contact with the film platen are required for maximum reproduction quality. The systems developed to handle these problems, many of which are interrelated, are very complicated and, as a consequence, create a third problem. It is invariably difficult and time consuming to load and thread the film through the maze of rollers, spindles, and tensioning mechanisms required to transport the film smoothly and without damage. Because of their complexity, film transport and film flattening systems have been a constant source of trouble in the design of imagery exploitation equipment. Often they are the limiting element. Inadequate transport systems have resulted in the under-utilization or rejection of otherwise acceptable equipment.

Since sophisticated film drives are a critical element in so much of NPIC's exploitation equipment, the Research & Engineering Division, TSG/NPIC, needs to optimize and standardize film transport system design criteria so that we can

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write meaningful specifications against future equipment developments. First, RED needs to establish a compendium of the design technology available in this area. It needs data on system characteristics, operational advantages and disadvantages, performance and cost trade offs. This data will be used in writing development objectives and in evaluating proposals. Second, RED needs to establish which combination of film transport system design techniques will provide optimum performance considering the critical problems and costs involved. Third, RED needs to review recent advances in automatic film threading technology to see if these techniques can be adapted to our more demanding requirements.

3. The proposed solution to the problem is to establish the required technical data base covering film transport system design approaches along with related operating characteristics and cost information. Since great advances have been made in the magnetic tape and paper industries with regard to threading and transporting strip materials, these industries will be surveyed by the contractor, as well as the more obvious motion picture and aerial film industries. The data base, thus acquired, will be a compilation of techniques used in film, tape, and strip handling systems for loading, threading, transporting, and flattening. The proposed contractor will perform a literature search and field survey to gather data. The data will be compiled, and missing information will be secured from additional specialized surveys or from actual engineering tests. Research will be performed to investigate new techniques for handling roll film. The final output of the proposed contract will be a detailed report. Minimum cost breadboards will be built, as required, to test the feasibility of a new technique or to establish operating parameters for a system. Since the proposed contract is a study, there is minimal technical "risk" as such. The only area for speculation in the contract is how broad and how complete the final data base will be.

4. Nine contractors were solicited for bids on the proposed study, and five gave positive responses. [redacted]
[redacted] was selected as first choice for performing the study on the basis of cost, superior technical approach, competent management, and a highly definitive work plan.

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5. No follow-on is currently anticipated; however, the possibility exists that, at the end of the proposed contract, a continuation may be desired to allow for further investigation of promising techniques for use on specific pieces of hardware such as the PI Scan & Search Station.

6. [] is appropriate for this work; Agency association with the contract will be CONFIDENTIAL, but the project title and work will be UNCLASSIFIED.

7. It is requested that approval be granted to negotiate a contract with [] at a cost not to exceed [] from Category IV FY-71 R&D Funds.

ARTHUR C. LUNDAHL
Director

National Photographic Interpretation Center

Attachments:

1. Proposal
2. Form 2420

APPROVED:

Assistant Deputy Director for Intelligence

Date

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